NOTE ON PROBLEM 374.

BY PROF. ASAPH HALL.

IF the solution of this problem given on p. 30 of the ANALYST, Vol. IX, be correct, it furnishes an easy method for improving numerical tables. Thus, we have only to interpolate the table into the middle, as the phrase is, and then laying aside the original table we have one of equal intervals but more accurate. Again interpolating into the middle we get a table still more accurate than the second one, and having the same arguments as the original, and so on *ad infinitum*. But the solution seems to me erroneous.

If we have a series of values v, v', v'', &c., all of which have the common probable error r, then the probable error of the sum or difference of any two of these values is $r.\sqrt{2}$. Since in interpolating we multiply the difference, $v'-v$, by a factor, $\frac{t}{10}$, the probable error of the correction $= \varDelta$, that we add to v, is $\frac{rt.\sqrt{2}}{10}$. Now the probable error of $v+\varDelta$ is

$$r.\left(1 + \frac{2t^2}{100}\right)^{\frac{1}{2}}.$$

Hence the interpolated value is less correct than the tabular one, and our method of improving the tables fails.

PLANETARY MASS AND VIS VIVA.

BY PLINY EARLE CHASE, LL. D.

ALL persistent oscillations in elastic media, whether luminous, electric, thermal, atomic, molecular or cosmical, MUST BE harmonic.

The fundamental harmonies of oscillatory movement in the luminiferous æther, must involve simple functions of the velocity of light.

In applying the oscillatory equation,

$$t = \pi\sqrt{\frac{l}{g}},$$

at the centre of gravity of a stellar system, let t represent the duration of an oscillation or half-rotation, g the acceleration of gravity at the stellar equatorial surface, $\pi^2 l$ the stellar modulus of light or the height of a homogeneous æthereal atmosphere which would propagate undulations with the velocity of light. Then, if the stellar rotary oscillation is due to the reaction of cosmical inertia against ætherial influence, *gt is equivalent to the velocity of light*, v_λ.